

EXHIBIT 12

UNITED STATES OF AMERICA Docket Copy
DEPARTMENT OF THE INTERIOR IDM-B 544
DEFENSE MINERALS EXPLORATION ADMINISTRATION
EXPLORATION PROJECT CONTRACT¹

IT IS AGREED this 5th day of June, 1953, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and Ronnie E. Smith, Tower Petroleum, Inc., Dallas, Texas, Jane Harper, c/o Franklin Supply Co., Chicago, Illinois, and James F. Darrigan, Chicago, Illinois - Partners

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fact

hereinafter called the "Operator," as follows: and as set forth in Annex I and Annex III.
ARTICLE 1. Authority for contract.—This agreement is entered into under the authority of the Defense Production Act of 1950, as amended, pursuant to DMEA Order 1 entitled "Government Aid in Defense Exploration Projects."

ARTICLE 2. Operator's property rights.—With respect to that certain land situated in the State of California, County of Contra Costa, described as follows: The 88 of the SW and the 88 of the SW of the NE of Sec. 29, T. 1 N., R. 1 E., Mount Diablo Base and Meridian, Reversed Feb. 1, 1934 (File No. 1066), except for areas described in Annex II and shown on map attached hereto, made a part hereof, and entitled "U.S.G.S. Bulletin 922-Plate 5, W65A-2845," the Operator represents and undertakes:

(a) That the Operator has the right to possession of the land and that the Owner's Consent to Lien is attached.

(b) That the Operator is a lessee, in possession and entitled to possession, and the Owner's Consent to Lien is attached. The Operator shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of the exploration project without any allowance for the use, rental value, depreciation, depletion, or other cost of acquiring, owning, or holding possession thereof.

ARTICLE 3. Exploration project.—The Operator, within 45 days from the date of this contract shall commence work on a project of exploration for Mercury

in or upon the described land; and shall bring the project to completion within a period of 10 months from the date of this contract. The work to be performed is more fully described in Exhibit "A" attached hereto, which, with any maps or drawings thereto attached, are made a part of this contract. The Government will contribute to the cost of this work as hereafter provided.

ARTICLE 4. Performance of the work.—(a) Operator's responsibility. The work shall be performed efficiently, expertly, in a workmanlike manner, in accordance with good mining standards and State regulations for health and safety and for workmen's compensation and employers' liability insurance, with suitable and adequate equipment, materials, and labor, to bring the project to completion within the time fixed. To the extent specified in Exhibit "A," attached hereto, the work may be performed by independent contractor or contractors; and work not specified in Exhibit "A" for performance by independent contractor may nevertheless be so performed upon amendment of Exhibit "A," as agreed to by the parties, to state the work to be so performed and the estimated unit costs thereof, as provided hereafter.

(b) Independent contracts.—Any independent contract for the performance of work shall be on a unit-price basis (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, per cubic yard of material moved), or on some basis that will indicate the amount due for work performed at any stage of the work to be performed under such independent contract. The Government shall not be considered to be a party to any such independent contract, and the Government's right to terminate the exploration project contract under any of its provisions shall not in any manner be affected by reason of any such independent contract. If the reference in Exhibit "A" to any such independent contract states that the Government's approval thereof is required, the Government may refuse to participate in the cost thereof unless and until it has given its written approval of the independent contract.

(c) Government may inspect.—The Government shall have the right to enter and observe and inspect the work at all reasonable times, and the Operator shall provide the Government with all available means for doing so. The Government may consult with and advise the Operator on all phases of the work.

ARTICLE 5. Estimated costs of the project.—A statement of the estimated cost of the project is set forth in Exhibit "A," attached hereto. Except insofar as any item of requirement or the estimated cost thereof set forth in Exhibit "A" is there or elsewhere designated as an "allowable maximum," such items of requirement and of related cost are estimates only, and may be exceeded to the extent that the Government may from time to time approve for the most economic and beneficial performance of the work within the limitation of the total aggregate estimate of costs. The Government's approval of any such excess over the estimate for an item of requirement or related cost will be signified by its approval and payment of any invoice or voucher for payment which expressly calls attention to such excess. Items expressly designated in Exhibit "A" or elsewhere as "allowable maximum," and the total aggregate estimated cost are limitations, and any excess therein will be for the sole account of the Operator in which the Government will not participate.

ARTICLE 6. Allowable costs of the project.—(a) The costs of the project in which the Government will participate are limited to the following:

(1) Independent contracts.—Payments to independent contractors under independent contracts listed in Exhibit "A." The estimated cost of any work to be performed under an independent contract is or shall be included in the estimate of costs in Exhibit "A" in terms of the estimated numbers of units of work to be performed, the estimated amount to be paid per unit, and the estimated total amount to be paid to the independent contractor, and such estimates shall be allowable maximums above which the Government will not contribute. Regardless of the provisions of any such independent contract, the Government will participate in the payments to the independent contractor only on account of work actually performed and that conforms with the provisions of the exploration project contract, and only to the extent that the Government deems the unit prices for the work under the independent contract to be reasonable and necessary. No such independent contract shall have the effect of increasing the estimated total cost of the exploration project contract nor the maximum amount which the Government will pay as provided in the exploration project contract.

(2) Labor, supervision, consultants.—Labor, supervision and technical services (including engineering and geological assistants), a schedule of which is included in the estimate of costs set forth in Exhibit "A." The requirements and related costs for supervision and technical services are allowable maximums.

(3) Operating materials and supplies.—Necessary materials and supplies including items of equipment costing less than \$50.00 each, and power, water, and fuel, a schedule of which is included in the estimate of costs in Exhibit "A."

(4) Operating equipment.—Any operating equipment to be rented or purchased, or which is owned and will be furnished by the Operator, with the estimated rental, purchase price, or the allowable depreciation, as the case may be, a schedule of which is included in Exhibit "A." Any items listed as owned and to be furnished by the Operator, and related allowable depreciation, are allowable maximums.

(5) Rehabilitation and repairs.—Any necessary initial rehabilitation or repairs of existing buildings, installations, fixtures, and movable operating equipment, now owned by the Operator and to be devoted to the purposes of the exploration contract, a schedule of which is included in the estimate of costs set forth in Exhibit "A." These items are allowable maximums.

(6) New buildings, improvements, installations.—Any necessary buildings, fixed improvements, or installations purchased, installed, or constructed for the purposes of the exploration work, with the estimated cost of each, a schedule of which is included in the estimate of costs in Exhibit "A." All of these items are allowable maximums.

(7) Miscellaneous.—Repairs to and maintenance of operating equipment (not including initial rehabilitation or repairs of the Operator's equipment), analytical work, accounting, workmen's compensation and employers' liability insurance and payroll taxes.

(8) Contingencies.—Such other necessary, reasonable direct costs of performing the exploration work, within the limit of the total aggregate estimate of costs, whether or not included in any schedule of costs in Exhibit "A," as may be approved by the Government in the course of the work, as indicated by its approval and payment of invoices and vouchers.

¹ If sufficient space is not provided in any blank use an extra sheet of paper and refer to it in the blank.
² State name, address, and nature of organization, if any.
³ Give legal description or enough to identify the property, particularly excluding any land or interest therein to which the Government's lien is not to attach or the production from which it is not to be subject to the Government's percentage royalty.
⁴ Strike out the provision not applicable.
⁵ Name of mineral or minerals.

(b) The Government's payment in all cases, will be based on actual, necessary costs (including contract unit prices) incurred not in excess of any "allowable maximum," and not in excess of the fixed percentage of the total aggregate estimated cost. Costs will be considered to be incurred only as they are or become due and payable.

(c) No items of general overhead, corporate management, interest, taxes (other than payroll and sales taxes) or any other indirect costs, or work performed or costs incurred before the date of this contract, shall be allowed as costs of the project in which the Government will participate.

ARTICLE 7. Reports, accounts, audits.—(a) Progress reports. The Operator shall provide the Government with monthly reports of work performed and costs (including contract unit prices) incurred under the contract, in quintuplicate (five copies), upon forms provided by the Government. These progress reports shall be certified by the Operator, and shall constitute both the Operator's invoice of costs incurred on the project during the period covered by the report and his voucher for repayment by the Government, unless the Government requires the use of a standard voucher form with invoice attached. Progress reports shall include surface and/or underground engineering-geological maps or sketches showing the progress of the exploration, with assay reports on samples taken concurrently with the advance in mineralized ground.

(b) Final report.—Upon completion of the exploration work or termination of the contract the Operator shall provide the Government with an adequate geological and engineering report, in quintuplicate (five copies), including an estimate of ore reserves resulting from the exploration work.

(c) Compliance with requirements.—If, in the opinion of the Government, any of the Operator's reports are insufficient or incomplete, the Government may procure the making or completion of such reports and attachments as an expense of the exploration work; and the Government may withhold approval and payment of any vouchers depending upon insufficient or incomplete reports.

(d) Accounts and audits.—The Operator shall keep suitable records and accounts of operations, which the Government may inspect and audit at any time. The Government may at any time require an audit of the Operator's records and accounts by a certified public accountant, the cost thereof to be treated as a cost of the project. The Operator shall keep and preserve all records and accounts for at least 3 years after the completion of the project or the termination of this contract. Upon the completion of the project or termination of the contract the Operator shall render a final account as provided in Article 12.

ARTICLE 8. Payments by the Government.—(a) The Government will pay 75 percent of the allowable costs incurred, as they accrue, in an aggregate total amount not in excess of \$ 55,178.25, which is 75 percent of \$ 73,571.00, the agreed, estimated total cost of the project in which the Government will participate. Provided, that until the Operator's final report and final accounting have been rendered to the Government, and any final auditing required by the Government has been made, and a final settlement of the contract has been made, the Government may withhold from the last voucher or vouchers such sums as it sees fit not in excess of ten (10) percent of the maximum total which the Government might have been called upon to pay under the terms of the contract.

(b) The Government may make any payment or payments direct to independent contractors and to suppliers, for the account of the Operator, rather than to the Operator.

ARTICLE 9. Repayment by Operator.—(a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than 6 months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows: See Article 11, substituted for that part of it, preceding the colon.

(1) One and one-half (1½) percent of any such net amounts not in excess of eight dollars (\$8.00) per ton.

(2) One and one-half (1½) percent of any such net amounts, plus one-half (½) percent of such net amounts for each additional full fifty cents (\$0.50) by which such net amounts exceed eight dollars (\$8.00) per ton, but not in excess of five (5) percent of such net amounts.

(For instance: The percentage royalty on a net amount of five dollars (\$5.00) per ton would be one and one-half (1½) percent on a net amount of ten dollars (\$10.00) per ton; three and one-half (3½) percent.)

(b) As here used, "net smelter returns," "net concentrator returns," and "other net amounts realized from the sale or other disposition," mean gross revenue from sales; or if not sold, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income-tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

ARTICLE 10. Assignment, transfer, or loss of Operator's interest.—Without the written consent of the Government, the Operator shall not assign or otherwise transfer or hypothecate this contract or any rights thereunder. The Operator shall not make any voluntary nor permit any involuntary transfer or conveyance of the Operator's rights in the land described in Article 2, without making suitable provision for the preservation of the Government's right to a percentage royalty on production and lien for the payment thereof; Provided, that mere failure by the Operator to maintain the Operator's rights in the land, without any consideration running to the Operator other than relief from the cost of maintaining such rights (as by surrender of a leasehold, failure to perform assessment work, or failure to exercise an option), coupled with complete abandonment by the Operator of all interest in or operations on the land for a period of 10 years from the date of this contract, shall not constitute such a transfer or conveyance. Should the Operator make or permit any transfer or conveyance in violation of this provision, the Operator shall be and remain liable for payment to the Government of the same amounts, at the same times, as would have been paid under the terms of the percentage royalty on production. If for any reason the net smelter returns, net concentrator returns, or other net amounts realized from the sale or other disposition of such production are not available as a means of measuring the amount of the Operator's liability, the amount thereof shall be estimated as well as may be, and in the event of dispute as to such estimate, the determination thereof by the Administrator of Defense Minerals Exploration Administration or by his successor shall be final and binding upon the Operator.

ARTICLE 11. Title to and disposition of property.—All facilities, buildings, fixtures, equipment, or other items costing more than \$50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

ARTICLE 12. Termination and completion.—The Government may, at any time, by written notice to the Operator, terminate this contract: (a) If the Operator fails to provide his share of the money necessary to prosecute operations pursuant to the terms of the contract; (b) if the Operator, in the opinion of the Government, fails to prosecute operations pursuant to the terms of the contract; or (c) if in the opinion of the Government, operations up to the time of the notice have not indicated the probability of making any worth while discovery and in the opinion of the Government further operations are not justified. Upon the completion of the project or any termination of the contract the Operator shall dispose of any remaining materials, supplies, facilities, buildings, fixtures, and equipment in which the Government has an interest, for the joint account of the Operator and the Government in the proportion of their respective interests; shall render to the Government a full and final accounting of his operations under the contract and his expenditures of money; and shall pay to the Government its pro rata share of any money remaining.

ARTICLE 13. Changes and added provisions.

Executed in sextuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

Robert B. Smith
Operator

By *William H. ...*
Administrator, Defense Minerals Exploration Administration

... certify that I am the secretary who signed of said corporation, that said contract was duly signed for and in behalf of said corporation by authority of its governing body, and is within the scope of its corporate powers.

EXPLORATION PROJECT CONTRACT

RONNIE B. SMITH

DOCKET NO. DMEA-2448

ANNEX I

Materials and Supplies. For the purpose of determining the Government's interest in materials or supplies remaining upon any termination of the work, they shall be considered in groups or categories (such as pipe, or explosives, or rails, or drill steel), and if the original cost of the remaining unexpended portion of any such group or category exceeded \$50, the Government shall have an interest therein as provided in Article 11 of the contract form.

Equities in Equipment. Unless expressly permitted by provisions in Exhibit "A", the operator shall not procure equipment or any other item under a rental-purchase agreement, an installment-purchase agreement, any agreement which creates or builds up an equity or interest in the thing procured which can be converted to legal title only by further payment or some other consideration, or any agreement other than for straight rental or cash purchase and delivery.

Preservation of Property. Until the final disposal of any equipment or other property in which the Government has an interest or equity, the operator shall preserve and protect same for the mutual best interests of the parties, any reasonable and necessary cost thereof to be treated as an allowable cost of the exploration work to which the Government will contribute.

EXPLORATION PROJECT CONTRACT
RONNIE E. SMITH
DOCKET NO. DMEA-2448

ANNEX II

The land referred to in Article 2 as exempted from the lease from Mount Diablo Quicksilver Company to Ronnie E. Smith is shown on map "Bulletin 922-Plate 6, DMEA-2448" and is described as follows:

Beginning at the NW corner of the NW $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Sec. 29, T. 1 N., R. 1 E., Mount Diablo Base and Meridian, thence running southerly along the dividing line between the NE $\frac{1}{4}$ of the SW $\frac{1}{4}$ and the NW $\frac{1}{4}$ of the SE $\frac{1}{4}$ of said Sec. 29, a distance of 20 chains to the SW corner of the NW $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Sec. 29; thence running along the southerly line of the NW $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Sec. 29, a distance of 2.924 chains; thence leaving said line and running in a northerly direction a distance of 20.23 chains; thence westerly to the point of beginning.

ANNEX

The following provisions are in lieu of all of paragraph (a) of Article 31 which precedes the colon:

If at any time the Government considers that a discovery or development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the final report and final account required by the exploration project contract, may so certify in writing to the Operator. Such certification shall describe broadly or indicate the nature of the discovery or development. The Operator, or his successor in interest, shall pay to the Government a royalty on all minerals mined or produced from the land which is the subject of the exploration project contract, as follows: (1) Regardless of any certification of discovery or development, from the date of the contract until the lapse of the time within which the Government may make such certification of discovery or development, or until the total net amount contributed by the Government, without interest, is fully repaid, whichever occurs first, unless the Government waives its right to a royalty; or (2) if the Government makes a certification of discovery or development, for a period of ten years (or other period fixed by the contract) from the date of the contract, or until the total net amount contributed by the Government, without interest, is fully repaid, whichever occurs first. Said royalty shall be a percentage of the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, as follows:

EXPLORATION PROJECT CONTRACT
RONNIE B. SMITH
DOCKET NO. DMEA-2448

EXHIBIT "A"

Description of the Work

The objective of the project is to explore the subject property for mercury ore. The geological details, and the site and purpose of the shaft, are shown on USGS map attached hereto and entitled "Mount Diablo Mine, Contra Costa County, California" dated January 1953. As indicated on the "Bulletin 929-Plate 6, DMEA-2448," the work consists of the following:

1. Level shaft site, erect a headframe with ore pocket, install an electric hoist (including motor, starter, head sheave, and hoisting cable), and build tram from headframe to dump.

2. Sink a 2-compartment timbered shaft (in cross section 4 feet by 8.5 feet in clear of timber) to a depth of 330 feet.

3. At a distance approximately 300 feet below the collar of the said shaft, drive a crosscut approximately 200 feet (in cross section 6 feet by 7.5 feet in clear of timber) in a southerly direction through the vein structure on the hanging wall of the fault; and from the sides of the crosscut, drift (in cross section 6 feet by 7.5 feet in clear of timber) in opposite directions along the strike of the fault for approximately 425 feet.

The total advance of the crosscuts and drifts shall not exceed 625 feet, and the location of shaft, crosscut, and drifts shall be subject to Government approval.

4. Samples of vein material encountered during the exploration shall be cut by the Consulting Engineer and they shall be assayed for mercury content, the place of sampling and assaying being subject to Government approval. The Consulting Engineer must also be approved by the Government, and shall direct the entire exploration program and prepare all reports required under the contract.

Estimated Costs of the Project
(*Indicates allowable maximum)

(1) Independent Contracts

Sinking 2-compartment shaft 330 feet @ \$121.20/ft.* 1/	\$39,996.00*
Driving crosscut and drifts 625 feet @ \$40.00/ft.* 1/	<u>25,000.00*</u> \$64,996.00*

(2) Labor, Supervision, Consultants

1 Consultant @ \$500.00/mo., 7 mos.* 2/	3,500.00*
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(3) Operating Materials and Supplies

None

(4) Operating Equipment

To be furnished by Operator, when needed, at no cost to the project.

- 3 Sterling trucks
- 1 International bulldozer
- 1 Dodge pickup truck
- 1 Joy Mfg. Co. wagon drill
- 3/4-yard Northwest power shovel
- 1 Ingersoll-Rand compressor

Auxiliary buildings, fuel oil and gas tanks, and loose tools

1/ This includes the cost of all necessary timbering, cost of all supplies, and maintenance and repair of all equipment. All equipment shall be furnished by Independent Contractor except that referred to in Item (4).

2/ This consultant shall be required to spend a minimum of two full days each week on the project, and this includes all his transportation costs.

To be purchased

1 Only 50 H.P. hoist with motor and starter	\$2,250.00*	
1 Only 36-inch sheave	125.00*	
750 feet 5/8-inch hoisting cable	<u>200.00*</u>	\$2,575.00*
(5) <u>Rehabilitation and Repairs</u>		
None		
(6) <u>New Buildings, Improvements, Installations</u>		
Level shaft site, erect headframe, ore bin, tramway to dump (includes cost of all labor, Workmen's Compensation and Employer's Liability Insurance, and Payroll Taxes)	2,000.00*	
(7) <u>Miscellaneous</u>		
Assaying 125 samples @ \$4.00/sample		500.00
(8) <u>Contingencies</u>		
None		

* * * * *

<u>Total Estimated Cost of Project</u>	<u>\$73,571.00*</u>
<u>Government Participation @ 75%</u>	<u>\$55,178.25*</u>

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of CALIFORNIA, County of VENTURA COUNTY described ~~as follows:~~ 1/

in a lease dated September 18, 1951, and recorded in book 1948,
page 356 of the official records of said county

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Bonnie S. Smith, Trustee

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production^{3/} provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4% 135,000.00, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 22nd day of April, 1953

MT. DIABLO QUICKSILVER CO., LTD. [Seal]

Vic Blomberg [Seal] President

Thio W. C. [Seal] Vice-President

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated _____, and recorded in book _____ page _____ of the official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half ($1\frac{1}{2}$) per cent of any such net amounts not in excess of eight dollars (\$8.00) per ton.

(2) One and one-half ($1\frac{1}{2}$) per cent of any such net amounts plus one-half ($\frac{1}{2}$) per cent such net amounts for each additional full fifty cents (\$0.50) by which such net amounts exceed eight dollars (\$8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars (\$5.00) per ton, would be one and one-half ($1\frac{1}{2}$) per cent; on a net amount of ten dollars (\$10.00) per ton, three and one-half ($3\frac{1}{2}$) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than \$50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

EXHIBIT 13

ASSIGNMENT OF LEASE

RONNIE B. SMITH, Trustee, of Tower Petroleum Building, Dallas, Texas, JENE HARPER, of Chicago, Illinois, and JAMES F. DUNNIGAN, of Chicago, Illinois, hereby assign to JOHN L. JONAS of 166 Los Nobles Drive, Burlingame, California, and JOHN E. JOHNSON of 520 South Van Ness Avenue, San Francisco, California, all their right, title and interest in lease dated September 12, 1951, to them from MT. DIABLO QUICKSILVER COMPANY, LTD. a Nevada Corporation for a term of 5 years commencing October 1, 1951.

Dated: ¹⁷December 1, 1953

Ronnie B. Smith
Ronnie B. Smith, Trustee

Jene Harper
Jene Harper

James F. Dunnigan
James F. Dunnigan

MT. DIABLO QUICKSILVER COMPANY, LTD., a Nevada Corporation, hereby consents to the above assignment and releases Ronnie B. Smith, Trustee of all obligation under said lease.

Dated: ²⁰December 20, 1953

MT. DIABLO QUICKSILVER COMPANY, LTD.

By Harold Rosenberg President

By Harold Rosenberg Secretary

(Corporate Seal)

In consideration of new lease by MT. DIABLO QUICKSILVER

COMPANY, LTD. to JOHN L. JONAS, and JOHN E. JOHNSON executed on December 1, 1953; the above mentioned lease is hereby cancelled.

Dated: ²⁰December 20, 1953.

MT. DIABLO QUICKSILVER COMPANY, LTD.

By Harold Rosenberg President

By Harold Rosenberg Secretary

John L. Jonas
John L. Jonas

John E. Johnson
John E. Johnson

(Corporate Seal)

Recorded at request of Dionny S. G. G.
55 min. Jan. 3, FEB 23 1954
Costa County Records
Ralph Cunningham, County Recorder.
Filed as an Assignment and as a
Cancellation of Lease.
By Cunningham-County Recorder
by Recorder

EXHIBIT 14

MT. DIABLO QUICKSILVER MINE

NARRATIVE REPORT FOR AUGUST 15 - 31 1953.

This report covers the period from August 15th thru August 31st 1953. On August 15th the operation got under way when C. W. Schuette established the collar elevation of the shaft, that is the level to which the shaft site was to be leveled by bulldozer, and laid out the shaft axes.

Leveling the shaft site was done by some drilling and blasting (item of \$30.15 for explosives MF-104) to loosen the ground (item of \$140.00 for labor of total labor item of \$389.20) and by a bulldozer which was rented for one day at a cost of \$50.00 (item of \$68.00 under rental of operating equipment MF-104). Some additional leveling will have to be done for the 300 feet of dump track for which \$215.30 for rails, bolts and track spikes and \$27.30 for track ties have been spent. (these last two items are listed under Track and Track ties on MF-104).

Timber for the headframe to the amount of 185 bd. ft. was on hand, costing \$106.97 (under timber on MF-104). The front bent of the headframe was framed and being bolted together at the end of the month and total labor cost was \$89.30 (part of total labor cost of \$223.20 on MF-104). Nails for the headframe construction came to \$23.65 and are so listed on MF-104.

Supervision and technical services are \$600.00 for the period.

The original intention was to buy a headframe but as no suitable one could be found it was decided to build one and C. W. Schuette sketched out a design that could be built from used timber that could be obtained at anytime. The headframe was being framed at the end of the month.

The shaft has been sunk 8 feet; a substantial sprig set has been framed over it and the first set below the collar has been concreted with suitable reinforcement by the end of the month.

The hoist was on its way to the mine and the cost of it and of the cable and slings was \$2000.00 and \$150.00 respectively, entered under Hoist and cable on MF-104 at \$2150.00.

Payroll taxes came to \$5.73 as listed on MF-104.

Work was proceeding briskly, the crew was competent and the job is off to a good start.

C. W. Schuette

MT. DIABLO QUICKSILVER MINE.

NARRATIVE REPORT FOR SEPTEMBER 1953.

During September 1953, the headframe was completed and a small bin was built in front of it. On top of the bin a hinged chute was built to swing over the shaft for dumping the sinking bucket. Track for a mine car was laid from the bin to the dump.

The hoist was set on a substantial concrete foundation and was placed in operation.

The power line, which formerly passed over the shaft site, was moved to a new location and the necessary connections for the hoist were made.

The safety crosshead was installed on Sept. 23rd and on the 25th the actual work of sinking was started. At the end of the month the shaft was 28 feet down from the collar. The hoisthouse was being erected at the end of the month.

Costs:

The completion of the headframe cost as follows:

Labor on headframe	\$ 984.13
Lumber	60.28
Iron (rods, bolts, angle irons etc)	251.33
Rent of crane to raise headframe	<u>32.50</u>
Total	\$1578.29

Note: Of this total, \$1290.77 has been entered on Forms MF-104 and MF-104A, as this brings the amount spent for "New Bldgs., etc", to the full allowable total of \$2000.00.

The installation of the hoist cost (in part) as follows:

Concrete for Hoist foundation	\$ 121.17
Reinforcing Iron	13.54
Lumber for concrete forms	5.87
Welding gas	<u>3.14</u>
Total	\$ 153.72

Note: Of this total, \$30.32 has been entered on Forms MF-104 and MF-104A, as this brings the amount spent to the full allowable total of \$2350.00

C. H. Schmitt

INTERIM REPORT
Second

OCT 2 1953

Docket No. : DMEA-2448 (Mercury)

Sept. 25, 1953

Name and address of operator: Rennie B. Smith and partners
Tower Petroleum Building
Dallas, Texas

Name and location of property: Mt. Diablo Quicksilver Mine,
SE 1/4 sec. 29, T. 1 N., R. 1 E.,
M. D. S. & M., Contra Costa County, Calif.

Contract No. : Idm 11344

SUMMARY AND CONCLUSIONS

The property was inspected on September 15 and 16, 1953 by an engineer of the U. S. Bureau of Mines accompanied by Mr. C. N. Schuette, consulting engineer, and by Mr. Vic Blamberg, assistant superintendent.

Work was started at the property on August 15, 1953. Work completed included shaft site leveling; and a portion of headframe construction and hoist installation. The shaft was sunk to a depth of 8 feet and concrete was poured for the collar set, hoist foundation, and hoist room floor.

Preliminary work was done efficiently and operating conditions were fair. The operator has not found a solution to water problems at the property described by the previous interim report of July 20, 1953. An independent contract for the shaft sinking operation has not been obtained by the operator.

RECOMMENDATIONS

(a) For improvement of operations: The operator should spend

more time on the property and should delegate either his consultant or superintendent with the authority to pay bills.

(b) Changes in project or target: None.

(c) Amendments to contract: None.

STATEMENT OF WORK COMPLETED

The shaft site was excavated and a 2-compartment shaft, measuring 4'-6" by 4'-6" was sunk to a depth of 3 feet.

A concrete collar set was poured at the shaft, and the construction of a headframe was nearly completed. The collar of the shaft was established at elevation 916 and near the location indicated by the contract.

A hoist with a 50-horsepower induction motor was being installed. A cross head, 750 feet of new 5/8" - 6x19 hoist cable, timber for headframe, 100 feet of 12-pound mine rail and other supplies needed for starting exploration operations were located at the property.

Supplies and equipment not on hand included a sinking bucket, air and water pipe, ventilation equipment and sinking pumps.

COMMENTS ON PROGRESS

Preliminary work was done efficiently by a skilled crew. The operator obtained the services of C. N. Schuette, consulting engineer, and Vic Elomberg, assistant superintendent who was a former operator of the property. The present crew consists of four workmen and includes Mr. Guy Castle, Melvin Bruner and two other shaft men. An independent contract has not been signed.

Excavation work for the shaft site required drilling and blasting to a depth of 3 feet. Equipment used by the operator included one TD-9 International bulldozer with scoop loader, one pickup truck, one portable air compressor with hoses, rock drills and hand tools. A bulldozer with an angle blade was hired for use in leveling the shaft site.

The Mt. Diablo Mining Co. has supplied welding and cutting equipment, hand tools and several small items.

Additional bracing of the headframe was needed. The assistant superintendent installed a 54-inch sheave and the shaft was widened to 4'-6" in clear of timber.

OPERATING CONDITIONS

Present operating conditions are fair. The operator, Ronnie E. Smith, is not in close touch with the exploration operation. The crew were living at Angels Camp, Calif. Mr. C. N. Schuetz expressed the opinion that the operator should spend more time at the property and delegate someone to pay bills.

Difficult water problems will be encountered at the property after the shaft reaches the water table.

OPERATOR'S MONTHLY REPORTS

The operator's monthly narrative report was good. The monthly report and voucher for the month of August 1953 lacked copies of the payroll, original invoices or certified copies of equipment and supply purchases.

GEOLOGY

The shaft was collared in altered sheared serpentine. No mercury mineralization was encountered.

SAMPLING

Samples of water were taken from the portal of the 155-foot level and from an evaporation pond at the property. The analyses will be included with the next interim report.



E. H. Sheehan
Mining Engineer

INTERIM REPORT
(third)

DEC 1 - 1953

Bucket No. : DMEA-2448 (Mercury)

November 18, 1953

Name and address of operator: Ronnie B. Smith and partners,
Tower Petroleum Building,
Dallas, Texas.

Name and location of property: Mt. Diablo Quicksilver Mine
9E 1/4 sec. 29, T. 1 N., R. 1 E.,
M. D. B. & M., Contra Costa County,
Calif.

Contract No. : Bms-2544

SUMMARY AND CONCLUSIONS

The property was inspected on Nov. 12, 1953 by an engineer of the Bureau of Mines accompanied by Mr. Vic Blomberg.

The exploratory shaft was sunk and timbered to a depth of 155 feet. No mercury mineralization was found. The rock consisted of sheared black shale and graywacke.

Work progressed at a satisfactory rate. Water problems are expected to be encountered by the work. The shaft was practically dry at its present depth.

The operation was conducted efficiently under the general supervision of Mr. C. N. Schuette, Consulting Engineer. Labor was performed by an independent contract crew of five men, led by Mr. Guy Castle and Melvin Bruner. Mr. Ronnie B. Smith, trustee, has retained financial control of the operation.

RECOMMENDATIONS

a. For improvement of operations:

The operator should spend more time at the property. He should provide his superintendent with financial aid to handle water problems that may be encountered, and other factors involved with the work.

WORK COMPLETED

The two compartment exploratory shaft was sunk to a depth of 155 feet, and timbered with standard shaft sets of 8- by 8-inch timber and 2-inch lagging.

Surface facilities completed included the construction of a head-frame, hoist installation, hoist house, and dump track.

COMMENTS ON PROGRESS

Excellent progress was made on the work. Operations were temporarily stopped from Oct. 20 to Oct. 23 because of a failure of the hoist motor which had to be replaced.

The actual shaft sinking operation was done by independent contract at a price of \$50.00 per foot for labor, who furnished explosives. Other material and supplies were purchased by the operator.

OPERATING CONDITIONS

Operating conditions were fair. Water has not yet been encountered in the shaft.

The operation was inspected by Mr. John C. Franz, California

State Safety engineer on October 23, 1953. His recommendations for improvements will be carried out as soon as possible according to the operator.

EFFICIENCY OF OPERATIONS

Mr. C. N. Schuette, consulting engineer, has efficiently supervised the work with some assistance from Vic Blomberg, resident and former operator.

The labor employed under the independent contract were skilled in their occupation and included five workmen. The work was conducted on a one shift per day basis. The men worked from 8 to 12 hours per day and six days per week.

OPERATOR'S MONTHLY REPORTS

Expenditures listed by the operator for the month of October showed a total expenditure to date of \$19,680.40 when the shaft was 117 feet in depth.

The operator's narrative report prepared by his consulting engineer was good.

UNUSUAL CIRCUMSTANCES

The independent contractors hope to complete the shaft sinking portion of the operation to a depth of 330 feet by January 1954.

Future progress will depend to a large extent upon water problems that will be encountered.

GEOLOGY

Advance was made in sheared black shale and graywacke. No mercury mineralization was observed in the shaft.

SAMPLING

Samples of water taken from the portal of the 165-foot level and from an evaporation pond at the property were analysed by the Bureau of Mines, Hydrometallurgical and Ore Dressing Branch, Region III.

<u>Sample No.</u>	<u>% Solids</u>	<u>Remarks</u>
S-240	2.30	Water from 165 level adit.
S-241	4.80	Water from large evaporation pond.

Spectrographic examination of residues from evaporation of water samples S-240 and S-241 detected the presence of Al, Fe, Ca, Mg, Na, and K. Si was not detected in either sample.

Examination with ultra-violet light and fluorescent screen detected Hg in residue S-240 only.

OTHER INFORMATION

According to Mr. Vic Blomberg, the operator may convey his lease on the property to Mr. John Jonas and associates.



B. H. Sheahan
Mining Engineer

MT. DIABLO QUICKSILVER MINE.

NARRATIVE REPORT FOR JANUARY 1954.

The shaft sinking was completed during January 1954.

The shaft is 330 feet deep and timbered to the bottom. At the very bottom a little water is seeping in. At a depth of 300 feet from the collar, a 14 foot station set was placed in the shaft and the crosscut was started to the south, at right angles to the long axis of the shaft. At the end of the month this crosscut was 45 feet long. The crosscut was entirely in the shales thru which the shaft was sunk, it was dry and has not been timbered to date. No provision was made in the contract for a shaft station and no station has been cut out.

Sinking was completed on January 16th and crosscutting started on the 18th using the sinking bucket for hoisting. After the crosscut had been advanced some 20 feet, the shaft was cleaned out and timbering was completed. Then a cage was hung in the shaft to hoist the 20 cu. ft. mine cars which are being loaded by a #12 Eimeo mucking machine.

At the shaft collar, tracks were laid from the shaft to a turntable under the bin chute. The dump track was extended north, crossing the road to a new and unlimited dump site.

A supply of transite pipe is on hand for the pump and a supply of peeler logs, some 8'-5" long and some 10" in diameter is on hand for timbering the crosscut.

The Contract No. IDM-E 544, Docket No. DMEA 2448 under which this work is being done, was transferred from:

Ronnie Smith, Trustee,

2106 Tower Petroleum Bldg., Dallas 1, Texas. to: //

John L. Jonas & John E. Johnson,
166 Los Robles Drive, Burlingame, California.

Geo. J. Schutte ?

C. H. Schutte

EXHIBIT 15

**PRP SEARCH REPORT
SITE CHRONOLOGY AND
PROPERTY HISTORY
MT. DIABLO QUICKSILVER MINE
CONTRA COSTA COUNTY, CALIFORNIA**



Prepared By:



**US Army Corps
of Engineers ®**

Sacramento District
Geotechnical & Environmental Engineering Branch

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Table 2 Mine Production History

APPENDICES

Appendix A Timeline

Appendix B References

Appendix C Orders

Appendix D Chain-of Title Search Report

Appendix E Miscellaneous title search documents

1.0 INTRODUCTION

1.1 Background

Mount Diablo Mercury Mine consists of a western and an eastern underground mine works, an open-pit mine, and mill works located in Township 1 North, Range 1 East, Section 29, Mount Diablo Baseline and Meridian (Figure 1), three miles from the City of Clayton, Contra Costa County, California. Mining activity began as four cinnabar mining claims; the Powell, Hastings, Welch, and Bendixen claims (Figure 2). The subject properties are Contra Costa County Assessor Parcel Numbers 078-060-034, 078-070-036, and 078-070-034 as well as 078-060-032 (Figure 3).

According to the public record at Contra Costa County, the acid mine drainage first came to the attention of the State of California in March 1939. A County prison farm (Thomas B. Swift Sunshine Preventorium) located downstream of the mine observed iron and sulfuric acid discharge to the creek and contacted the California Bureau of Sanitation, Department of Public Health. Mine drainage also elevated chloride from interception of natural spring water. In response, the mine operator constructed a catch basin that functioned to percolate acid mine drainage into the subsurface during the dry season and overflowed during the rainy season. The result was that sporadic complaints of hard water in downstream wells began to occur. Eventually, the prison farm abandoned its wells.

The United States Public Health Service published the first chemical water quality standards in 1946. After this, regulatory interest in the mine drainage by the Bureau of Sanitation, California Department of Public Health increased as evidenced by an increase in correspondence found in the County records. The focus at this time was on general water quality parameters, not toxicity.

The California Dickey Water Pollution Control Act was passed in 1949. On June 9, 1952, the Water Pollution Control Board #5 (predecessor of the Regional Water Quality Control Board Central Valley Region) issued the first waste discharge requirements for the mine discharge, Order No. 135. The order was written to Mr. Ronnie B. Smith. The Regional Water Pollution Control Board later issued Resolution Number 53-21 on February 27, 1953. Mr. Smith lost interest in the mine shortly after this occurred and the partnership of Jonas and Johnson assumed operation. The most recent order in the record is Order No. 78-114 on September 8, 1978 issued to Jack Wessman.

The original order included a pH neutralization requirement and resulted in the use of lime in the pond during high flow by 1958. Also in 1958 acid mine drainage was found to be polluting the water in the Kings Marsh Creek Springs Resort Swimming Pool.

This report was prepared by the Geotechnical and Environmental Engineering Branch of the Engineering Division, Sacramento District, United States Army Corps of Engineers (USACE).

1.2 Approach

This report follows EPA's guidance document titled PRP Search Manual (USEPA, 2003). A Baseline PRP Search has been conducted. The "Site Chronology and Property History Report" is presented here using the format suggested on Page 212 of the manual. The report does not include a PRP Synopsis Report.

1.3 Key contacts

<i>Position</i>	<i>Name</i>	<i>E-mail</i>	<i>telephone</i>
Program Manager	[REDACTED]	[REDACTED]@usace.army.m	505-342-3435
Project Manager	[REDACTED]	[REDACTED]@usace.army.mil	916-557-7455
EPA Region IX Counsel	Larry Bradfish	Bradfish.Larry@epamail.epa.gov	415-972-3934
EPA Region IX RPM	John Hillenbrand	Hillenbrand.John@epamail.epa.gov	415-972-3494
USACE Counsel	[REDACTED]	[REDACTED]@usace.army.mil	916-557-5293
Technical Lead	[REDACTED]	[REDACTED]@usace.army.mil	916-557-7903
RWQCB	Victor Izzo	vizzo@waterboards.ca.gov	916-464-4626
RWQCB	Ross Atkinson	ratkinson@waterboards.ca.gov	916-464-4614
Contra Costa County	Edward Turner (GIS)	eturn@pw.cccounty.us	925-313-2015
	Lillian Fujii	LFujii@cc.cccounty.us	925-335-1814
	Linda Wilcox (counsel)	LWilc@cc.cccounty.us	925-335-1800
	Sue Loyd (Hazmat)	sloyd@hsd.cccounty.us	925-250-7912
	Mitch Avalon (PW)	maval@pw.cccounty.us	925-313-2203
CH2MHill	Todd Wang	Todd.Wang@CH2M.com	916-563-2521

1.4 Report Overview

The report is divided into a site history and a property history. The site history discusses operations at the site and the permitting and regulatory history. The property history is a discussion of property ownership evidenced by legal documents such as titles, deeds and liens, and also discusses any environmental studies documenting risk to human health and the environment. All available references cited in the report are found in Chapter 4.0 (References) have been included in Appendix B as a compact disc. The land in Section 29 was patented to individuals by the US General Land Office in the late 1800s. Since then the land has been subdivided. A cross-reference table is included in Table 1 that correlates present day subdivision assessor parcels to original quicksilver (mercury) mining claims filed with Contra Costa County and the United States General Land Office as an aid to the reader.

2.0 SITE HISTORY

Some background information is necessary to understand the early history of the Mount Diablo Mercury Mine. A timeline is included in Appendix A. In the early days of American westward expansion, federal land was not yet surveyed, mining laws were inadequate or non-existent, squatting and sometimes violent disputes over mining claims was common. At Mount Diablo, many mercury mining claims were established years before the United States General Land Office (GLO) established control over public land. The initial mining claims were filed with Contra Costa County and recognized by the GLO only decades later. Subsequently the land was subdivided, consolidated, and subdivided again. In order to understand how the present and past parcel boundaries were drawn and hence which present and past property owners might be Potentially Responsible Parties (PRPs), and to understand the reasons for the sudden commencements and terminations of mining activities according to the market price of quicksilver (mercury) it is helpful to place the past mining activity in historical context.

California gained independence from Mexico on June 14, 1846. After four years as the "Bear Flag Republic", California gained Statehood on September 9, 1850 as part of the Compromise of 1850. William Ryder Powell filed the first recorded mineral claim with Contra Costa County on April 29, 1849 during the tenure of the Bear Flag Republic. His original claim therefore pre-dates federal jurisdiction. The claim was a placer-mining claim for cinnabar in Dunn Creek adjacent to what was to become the Mount Diablo Quicksilver Mine.

Mount Diablo was first established as a baseline and meridian for the United States Public Land Survey in the West in July 1851 by Col. Leander Ransom. R. D. Cutts of the Coast and Geodetic Survey (now the National Geodetic Survey of NOAA) placed a marker there for use in the National Triangulation Survey in 1852. Spanish land grants honored under the Treaty of Guadalupe Hidalgo were surveyed first, which lasted at least through 1859. These grants existed primarily along the California coast and in the

Central Valley. No such grants covered Mount Diablo; it therefore became federal land upon statehood.

Mining claims are difficult to file without cadastral data such as the Public Land Survey. William Brewer, accompanying Josiah Whitney's famous geological survey for the California Geological Survey, established the elevation of Mount Diablo peak in 1862, which established the basis for cadastral survey. The first official federal land patent in the Section was in 1862 to the Western Pacific Railroad, authorized by the Pacific Railway Act of 1862. Prior to this time there was no land record at Mount Diablo. The American Civil War officially began when the Confederacy fired on Fort Sumter on April 12, 1861. Few federal land patents other than those directed by Congress were issued in California until the late 1860s, even though mining operations on federal land were already well underway. Squatting on federal land by miners was encouraged during the Civil War since the Union needed metals for the war effort, but it took decades after the fact to sort out the land claims.

The town of Clayton near the mine was founded by Joel Clayton and Charles Rhine in 1857 which created a logistical base for mining on Mount Diablo. The Civil War created a great demand for strategic minerals, including copper and mercury. A "copper rush" began at Mount Diablo in 1862. Placer deposits of cinnabar were already known and being mined in the area for use in the gold fields. As a result of the search for copper, cinnabar (mercury sulfide) deposits were discovered on federal land at Mount Diablo in 1863.

A number of laws have affected mining in the West that are helpful to keep in mind while reviewing this report including the

- US Chaffee Mining Act of 1866
- US Mining Act of 1870 (placer mining)
- US General Mining Act of 1872
- US Timber & Stone Act of 1878

- Stock Raising Homestead Act of 1916
- US Public Health Service Drinking Water Standards Amendments of 1946
- California Dickey Water Pollution Control Act of 1949
- Defense Production Act of 1950
- US Public Health Service Drinking Water Standards Amendments of 1962
- California Porter Cologne Water Quality Control Act of 1969
- US Water Pollution Control Act Amendments of 1972 (Clean Water Act)
- Safe Drinking Water Act of 1974
- California Surface Mining and Reclamation Act of 1975
- US Surface Mining Control and Reclamation Act of 1977
- California Toxic Pits Cleanup Act of 1984

Demand for mercury for use in the manufacture of mercury fulminate in subsequent wars caused the price of mercury to soar and generated renewed interest in mercury mining at Mount Diablo. The site history shows renewed activity during the Second World War, the Korean War and the Vietnam War. The last known mining activity was by the Guadalupe Mining Company in the early 1970s. Since then demand for mercury has been low as substitutes have been found for many of its former uses. The last operating mercury mine in the United States, the Cordero Mine in Humboldt County, Nevada, shut down in 1981. Since then there has been no interest in re-opening the mercury mine on Mount Diablo.

2.1 Location

The area was once subject to a great deal of mining activity for mercury, copper, coal, and manganese and was referred to by the United States Bureau of Mines as the Mount Diablo Mining District. The site is located in Township 1 North, Range 1 East Section 29 of the Mount Diablo Baseline and Meridian (Figure 1). The western and eastern mine works are located on Contra Costa County Assessor Parcel Number 078-060-034. The settlement pond is located on Parcel Number 078-070-036. Some of the

mine waste is on Parcel Number 078-070-034 immediately to the southeast of the mine properties. Altogether the disturbed land is approximately 100 acres.

Geographically the site is on the northern slope of North Peak north of Mount Diablo, near the intersection of Marsh Creek Road and Morgan Territory Road. The nearest town is the City of Clayton three miles to the northwest. Mine drainage flows to Dunn Creek, a tributary of Marsh Creek. Lower Marsh Creek flows through a flood control project funded by the US Department of Agriculture Soil Conservation Service (now the Natural Resource Conservation Service) under the PL-566 Watershed Protection and Flood Prevention Program. The creek flows through the CalFed Dutch Slough Wetland Restoration Project and eventually flows to Big Break and Dutch Slough and hence to the San Joaquin River (Stockton Deep Water Ship Channel), near the confluence of the San Joaquin and Sacramento Rivers in the Sacramento-San Joaquin Legal Delta.

2.2 Adjoining Properties

The parcel to the immediate north of the mine property (078-070-033) was originally patented by the US General Land Office to the Western Pacific Railroad (See Attachment E) as the first land patent in the Section. The land patent was withdrawn, as the Transcontinental Railroad Act did now allow the railroads to receive land grants with mineral resources, and re-issued as a mineral patent to William Rider Powell of Powell Cinnabar in 1898. Powell had already filed a placer mining claim with Contra Costa County as early as 1849. Powell placer mined Dunn Creek for cinnabar. Today the land is owned by Mount Diablo State Park.

The parcel to the west (078-060-033) was originally part of the George Grutchfield GLO homestead claim and subsequent consolidated Mount Diablo Quicksilver Mine property. The property was used as a rock quarry by the Bradley Mining Company. The property was sold by Robert E. and Dana Dunn on June 11, 1992

to Save Mount Diablo, who in turn sold the property on July 10, 1992 to the California Department of Parks and Recreation (Mount Diablo State Park).

The parcel to the south (078-060-032) was originally a non-patented mineral claim filed by Jacob Bendixen with Contra Costa County on April 28, 1878. According to County records, Mary Ives Crocker and Kate Dillon Winship bought the land from Jacob Bendixen and Paul de Martini on December 23, 1908. The property is owned by Mount Diablo State Park today.

APN 078-060-009 to the south was patented (Patent 312143) by the General Land Office as a homestead claim to Joseph Arraya on January 28, 1937. The property belongs to Mount Diablo State Park today.

Parcel 078-070-034 to the southeast was originally part of the Lyman Hastings cinnabar claim (patent 1494) and the consolidated Mount Diablo Quicksilver Mine. The Morgan Territory Investment Company subsequently acquired it and sold it to The California Department of Parks and Recreation on February 2, 1976.

Land to the east was patented by the GLO as Patent 1494 to a mercury miner named Lyman W. Hastings on May 15, 1869, although his mining claim with the County preceded that. This land patent included 120 acres in Section 28 and 40 acres in Section 29 where the pond, eastern mine works and mill works from the Mount Diablo Mercury Mine are today. Immediately east of this land was the mercury prospect at Sunshine Camp.

Southeast of the property on APN 078-120-041 is the old Perkins Canyon mercury mine that has been attributed to Lyman Hastings. The land is owned today by Mount Diablo State Park.

The record shows there were several mercury mines and prospects in the Mount Diablo Mining District, two near Sunshine Camp, two in Perkins Canyon, two in Long Canyon,

and one at Russelmann Creek. Asbestos, manganese, and copper mines are more numerous in the mining district. No calcines can be found today at any of the other mines. Either the calcines have subsequently been washed away, or more likely, ore was transported to the millworks at the Ryne Mine and later the Mount Diablo Quicksilver mine for processing.

2.3 Site Owners/Operators

The current site owners are Jack and Carolyn Wessman who bought the property from the Guadalupe Mining Company on July 2, 1974. Mr. Wessman was an employee of Security Pacific Real Estate Services at the time. They subsequently subdivided the property and parcel 078-070-036 was deeded to the Mount Diablo Springs Improvement Society (Jack and Carolyn Wessman) on December 30, 2005 and Parcel 078-060-034 was deeded to the Wessman Family Trust on May 10, 2005.

For most of the mine's history, mine operations have been conducted under lease by mine operators and not the property owners. Past mine owners are discussed in the chain-of-title search discussed in Section 3.1

Robert Ogilby, an ownership partner with John Welch, financed and superintended the mine during its early years. Robert Ogilby later became a faculty member of the College of California in Oakland and hence became a charter professor at the University of California in 1869. He went on to found the gold mining town of Ogilby in Imperial County, California after the region was made accessible by the completion of the Southern Pacific Railway. Ogilby listed his profession at the time as surveyor and engineer. Because of his association with government, consideration was given as to whether at any time he might have acted as an agent for the State of California or the United States of America in any of his mining ventures. No evidence was found that Ogilby ever, at any time, acted as an agent for others.

Mr. Ogilby was named in Mining and Scientific Press of San Francisco as a capitalist who built the road to the Welch mine and financed the mill works. He also built the Ogilby Toll Road from "Lake Valley" in what is today South Lake Tahoe to Johnson's Pass along today's Highway 50 route. Ogilby Grade, Ogilby Creek and Ogilby Canyon in El Dorado County were all named for him. The ghost town of Ogilby in Imperial County was a gold mining town beginning around 1884 and was likely named for the same man. Robert Ogilby is also a renowned artist of early California scenes. His painting of Grass Valley during the Gold Rush hangs in the Bancroft Library of the University of California at Berkeley today. According to census records, he was an immigrant who came to California in 1849 or 1850 during the Gold Rush. He lived in Sacramento, Oakland, and is last known to have lived in and probably died in a boarding house in the City of San Francisco leaving behind a wife and two children. He evidently made and lost several fortunes. Mining busts at Mount Diablo and Imperial County probably left him a pauper in old age.

The first known mine operator who was not a mine owner was E.J. Ryan who operated the western mine works from 1875 to 1877. It is estimated that as many as 1,000 flasks or 76,000 lbs of mercury were produced from the western mine in the early years.

Miners named Vic Blomberg and others (Hardy, Moni) began leasing the eastern and western mine properties circa 1930. They produced at least 58 flasks or 4,408 lbs. of mercury from the western (Ryne) mine works and 9 flasks or 684 lbs. from the eastern mine works.

Vic Blomberg formed Mount Diablo Quicksilver Mining Company, purchased the eastern Hastings mine from E.A. Howard Lumber in 1934 and purchased the western Welch (Ryne) mine from Joseph Tonge at about the same time. This consolidated the mining operations into one unified mining property.

C.W. Ericksen operated the mine from 1933 to 1936 and produced at least 730 flasks or 55,480 lbs of mercury. The archive at the Contra Costa County Historical Society includes a record of sales.

Mr. Ericksen was succeeded as mine operator by the Bradley Mining Company, owned by Worthen Bradley, from 1936 to 1947. According to the records of the US Bureau of Mines, the Bradley Mining Company operations account for most of the mercury production at the mine. They produced 10,329 flasks or 785,000 lbs. of mercury and generated 91,561 tons of calcine waste.

The mine closed in the aftermath of World War II but reopened during the Korean War. In 1951 the mine was leased and operated by a partnership. Ronnie B. Smith, whose office was in the Tower Petroleum Building in downtown Dallas, Texas served as trustee for a partnership formed by Jene Harper, President of Franklin Supply Co of Chicago, Illinois which still exists today, and James Dunnigan, President of Producers Refining which was later taken over by CITGO, which now belongs to PDVSA, the Venezuelan State Oil Company. Contact information given at the time is below:

Ronnie B. Smith, Trustee
2106 Tower Petroleum Building
1907 Elm Street
Dallas, Texas 75201

Gene Harper, President
Alfred J. Mitchell, Treasurer
Franklin Supply Company
624 South Michigan Avenue
Chicago, Illinois

James F. Dunnigan
Producers Refining
Chicago, Illinois

Ronnie B Smith obtained a 75/25 cost-sharing agreement with the United States Department of the Interior Defense Minerals Exploration Administration (DMEA) under the Defense Production Act of 1950. While they operated the mine for a short time, they

may never have done so under the contract with DMEA, which was signed in 1953. Their production is estimated to be 102 flasks of mercury and 1,369 tons of calcines.

By 1954, J.L. Jonas and J.E. Johnson operated the mine under the DMEA cost-sharing agreement. Production was 21 flasks of mercury and 309 tons of calcines. Their addresses were given as:

John L. Jonas

Ex 4 [REDACTED]

John E. Johnson

Ex 6 [REDACTED]

Jonas and Johnson arranged to assume the DMEA contract in place of the Smith partnership in 1954 and operated under the cost-sharing arrangement through 1955. The records can be found in DMEA Docket Number 2448, on file with the US Geological Survey office in Spokane, Washington (USGS, 2003). A review of the docket, which numbers several reams of paper, revealed as a condition of the cost-sharing agreement that the DMEA required advance submission of a plan detailing the exact location of planned shafts and drifts. The DMEA claimed 75% ownership of all capital equipment used in expanding the mine, hired an onsite consultant to monitor progress, and conducted detailed audits of expenditures at the mine. Furthermore, when the mine was flooded, the DMEA reviewed the plan to de-water the mine and later to treat acid mine drainage and approved payment for the work. The terms of the contract also gave DMEA a royalty interest in any minerals discovered as a result of the mine expansion performed with the loan.

The mine was flooded in 1955 during the execution of the DMEA loan contract and a miner was killed. The State of California Regional Water Pollution Control Board brought mine de-watering to a halt due to complaints from neighboring properties about

the acid mine discharge. Jonas and Johnson were never able to put the mine back into operation after the disastrous flooding.

Cordero Mining assumed operation of the mine in 1955. Contact information given was

Cordero Mining Co.
131 University Avenue
Palo Alto, California
J.N. Pew, Jr., President
S.H. Williston, Vice-President
John C. Agnew, Secretary-Treasurer

Cordero Mining was created with discovery of the Cordero Mercury Mine in Humboldt County, Nevada. At peak operation, the Cordero Mine was the largest mercury mine in the United States and was the last operating mercury mine in the United States before it closed in 1981. Cordero Mining was bought by Sun Oil Company (Sunoco) in 1941 and was dissolved or sold in 1993. Sun Oil Company is currently cleaning up the Horse Heaven Mine in Jefferson County, Oregon under a Record of Decision. The Horse Heaven Mine is an abandoned mercury mine property that was once owned by Cordero Mining and is now owned by Sunoco.

Cordero Mining declined to use DMEA funds and operated the mine independently, completing the work planned under the DMEA contract by adding several hundred feet of tunnels to the existing underground mine works. Ore was not of sufficient grade to be economic and Cordero dumped the excavated rock and unprocessed metacinnabar ore and ceased operations within a year.

Cordero's participation at Mount Diablo was documented in DMEA Docket #2448, and was also discussed on page 23 of CDMG Special Report 80.

Sometime in 1956, Nevada Scheelite (a subsidiary of Kennametal), a tungsten-mining company from Nevada, operated the mine. Amount of production is unknown. When Nevada Scheelite abandoned operations in 1958, John E. Johnson took over operation of the mine but died shortly thereafter and mine operations ceased.

In 1960, Pacific Gas and Electric sought an easement or right-of-way for high voltage power lines to pass over the Mount Diablo Quicksilver Mine property. More information is found in the mining company records now in the archives of the Contra Costa County Historical Society in Martinez, California. Vic Blomberg, mine superintendent and President of the mining company, demanded a payment of \$250,000 as compensation for the easement. PG&E believed this amount to be unreasonable and filed a lawsuit. The court record was not obtained but outcome of that lawsuit is clear since the high voltage power lines now pass directly over mine waste from the western (Ryne) mine works. Site inspection would be required to determine if PG&E disturbed mine waste or mill works when they erected the power lines over the Ryne mine.

On May 11, 1962, Victoria Resources purchased the mining properties from Mount Diablo Quicksilver Mining Company, as determined by title search. The contact information was

Victoria Resources
Boris Gresov
925 Fifth Avenue
New York, New York

Whether they ever actually operated the mine is unknown. They may have been a lumber company like E.A. Howard before them. From 1965 to 1970, Victoria Resources leased the property to mine operator Welty & Randall. Little information was found on this mine operator. Their principle activity was reworking the mine waste to extract additional mercury (RWQCB Memo July 17, 1967).

On December 9, 1969, the Guadalupe Mining Company purchased the mine from Victoria Resources. The contact information given was

Guadalupe Mining Co.
14900 Guadalupe Mine Road
San Jose, California

No record of mine production was found but documents mentioned that mining activity continued until 1971. The Wessmans purchased the property from Guadalupe Mining Company on July 2, 1974 and have not operated the mine. The last marketable recorded production was 21 flasks or 1,596 lbs of mercury produced from 309 tons of ore by Jonas and Johnson during the tenure of the DMEA contract in the early 1950s.

2.4 When Operations Began

The first recorded mercury mining operation at Mount Diablo was reported to be prospector Francis Such in 1850. The first mining claim was filed by Lyman Hastings in nearby Perkins Canyon, date unknown. John Welch discovered cinnabar on the western part of APN 078-060-034 in 1863. The property to the north was a placer mining claim filed by William Ryder Powell in Dunn Creek apparently first filed with the County in 1849. Metacinnabar was discovered on the eastern part of the Wessman property by Frances C. Hastings-Hunsaker, widow of Lyman H. Hastings who had been placer mining Marsh Creek and mining in Perkins Canyon, sometime between 1874 and 1907, probably in 1877. Jacob Bendixen filed a mining claim in the southeast quarter of Section 29 on April 28, 1878. The Welch and Hastings claims were consolidated by Vic Blomberg and the Mount Diablo Quicksilver Mining Company in the early 1930s. Mining operations continued intermittently on the consolidated mine property until 1971. Mercury mining activity therefore spanned over a century.

2.5 Type of Operations

Initially mining at both the Welch (Ryne) Mine and the Hastings mine was conducted as hard rock mining underground. In 1936, the mining method was changed to open-pit mining by the Bradley Mining Company. For milling, ore was crushed and placed in a rotary kiln where it was heated to a temperature of over 500 degrees Centigrade to vaporize mercury, which was recovered by retorting. Low-grade ore and

processed calcines were disposed on-site. There is evidence that mine waste was also sold as aggregate (see Table 2).

2.6 Substances Manufactured, Treated, Stored, or Disposed

Mercury was extracted by mining, crushing, rotary kiln, and retorting of mercury vapors. Calcine waste was disposed onsite and sold (Table 1). Mercury had several historic uses. It was used in gold mines in the Sierra Nevada for separating gold from ore. Mercury was also used for ethyl mercury in vaccine preservation and calomel (Hg_2Cl_2), a sort of predecessor to tincture of iodine as an anti-bacterial treatment, and mercury nitrate, used in felting. But the biggest demand was for the manufacture of mercury fulminate - $\text{Hg}(\text{ONC})_2$ - used in percussion caps and blasting caps. The price for mercury skyrocketed with each war, stimulating an increase in mining activity. Mining company records at the Contra Costa County Historical Society indicate that customers included a mercury commodity trader in San Francisco, furriers, major pharmaceutical companies, instrument companies, gold mines, and a rifle cartridge manufacturer.

2.7 Waste

Calcine tailings were the principle waste generated by the mine. The calcines typically contain metal sulfides such as pyrite (FeS), millerite (NiS), chalcocite (CuS), stibnite (SbS), realgar (AsS), alabandite (MnS), and galena (PbS). Acid mine drainage is a biogeochemical process that occurs as a result of the contact of reduced sulfur and metal sulfides with water and oxygen. This process generates sulfuric acid and dissolved metal ions, a self-sustaining process which presents the principle environmental concern from the mining operation.

2.8 Permits

The RWQCB issued Waste Discharge Requirements Order 78-114 on September 8, 1978 which is still in effect. Permits and orders are included in Appendix C.

2.9 Warnings or NOVs issued by regulatory agencies

The Bureau of Sanitation of the California Department of Public Health issued various citations beginning in 1939. The California Regional Water Quality Control Board Central Valley Region issued Resolution 135 on May 15, 1952 and Resolution Number 53-21 on February 27, 1953 to control discharge from acid mine drainage. A Waste Discharge Requirement and Cleanup and Abatement Order were issued on November 20, 1978 to Jack Wessman.

3.0 PROPERTY HISTORY

3.1 Chain-of-Title Search

The search began with the records of the Bureau of Land Management office. General Land Office records were searched to determine to whom the land was originally patented by the United States Government. Contra Costa County was contacted to determine current property ownership. NCO Financial Systems, Inc. performed the chain-of-title search for Environmental Data Resources, Inc. The chain-of-title search report is in Appendix D. The search was complex because the present-day subdivision parcel boundaries are different from the original federal land patent boundaries. Additional property records are found in Appendix E.

Western Parcel (western half of APN 078-060-034)

Copper miner John H. Welch filed a mining claim on April 15, 1863 with Contra Costa County. The claim included the northwest quarter of T1NR1ES29, the northwest quarter of the southeast quarter, and part of the southwest quarter of the northwest quarter (Figure 2). Mr. Welch was searching for copper on behalf of a copper mining company from the Sierra Nevada foothills called Pioneer Copper Mining Co of El Dorado County and discovered cinnabar in a rock outcrop on the subject parcel. The Mining and Scientific Press of San Francisco reported mining operations at this mine beginning in 1863. No records exist with the US Bureau of Mines or California Geological Survey from this time period. On April 17, 1875 Mr. Welch now of Welch Quicksilver Mining Company was granted a federal land patent for 20 acres in T1NR1ES29 referred to as Mineral Lot 37, Welch Quicksilver Mining Claim, and Mineral Lot 38 Welch Consolidated Mine & Mill Site. After the American Civil War, the price of mercury plummeted and there were a number of court cases recorded regarding debts owed by the mine and mining claim infringements in the years after the War.

The earliest production information is available from the reports of the California State Mining Bureau created in April 1880, the first report of mine production appearing in an 1888 report (CSMB, 1888). The source of its information regarding mineral production at Mount Diablo prior to 1888 is unknown. The first mining operations recorded began in 1875, although the mine had been operating since 1863. The production from 1863 to 1875 is therefore unknown. The US Bureau of Mines was created by Public Law 179, the Organic Act of 1916 (and was eliminated in 1995). The Bureau of Mines Mineral Yearbook had its first record of production at Mount Diablo in 1943. There is a gap in the record from 1877 to 1930. It is suspected some unreported production may have occurred during that time period.

The mine reportedly fell into litigation in 1877, probably with the Hastings claim at the eastern mine works or the Jacob Bendixen claim to the south (Mineral Survey 3639 Bendixen Mine, claimed filed with Contra Costa County on April 28, 1878), and did not re-open. Perhaps as a consequence of inactivity, on December 10, 1912 the US General Land Office revoked the land patent for Mineral Lot 37, Welch Quicksilver Mine, Mineral Lot 38, Welch Consolidated Mine and Mill Site, and the Bendixen Mine (Mineral Survey 3639), and restored the land to federal ownership. This made the US General Land Office an abandoned mercury mine owner for a period of about 17 months. On May 11, 1914, George E. Grutchfield was granted a federal land patent for 160 acres that includes the Welch quicksilver mine and the Bendixen Mine (the Hastings claim remained a separate property). The land was purchased from the General Land Office and was recorded as a homestead claim with Contra Costa County.

On April 27, 1915, Agnes Grutchfield inherited sole title as widow of George E. Grutchfield. She promptly leased the property to Joseph Tonge. Agnes sold the property to Joseph Tonge on April 24, 1930. In the meantime, beginning on January 14, 1930, Joseph Tonge subleased the mining property to miners named Blomberg, Hardy and Moni. Sometime between April 24, 1930 and January 17, 1936, Blomberg & Moni bought the property from Tonge, although that title document has not been found.

On January 17, 1936, the property title was transferred from Blomberg and Moni to the Mount Diablo Quicksilver Mining Company with Mr. Blomberg as company president.

Company officers were:

Vic Blomberg, President
Phil W. Cox, Vice-President
Harold Blomberg, Secretary

The eastern mine works dating to the Hastings claim was purchased by Mt. Diablo Quicksilver Mining Co. from E.A Howard of Howard Lumber Co. on February 11, 1934. So the three mining properties, Hastings, Welch, and Bendixen claims, were formally unified as one consolidated mining property on January 17, 1936.

On May 11, 1962, Victoria Resources of New York purchased the property from the Mount Diablo Quicksilver Mining Company. Victoria Resources was run by a man named Boris V. Gresov and the company address traced to a town home facing Manhattan's Central Park at 925 Fifth Avenue, New York, New York

The property was purchased on December 9, 1969 by Guadalupe Mining Company of Santa Clara County. On July 2, 1974, Jack and Carolyn Wessman, the current owners, purchased the property.

California real estate disclosure laws have been around since the Easton v. Strassburger decision of 1984, a case in which a real estate agent failed to disclose a landslide hazard which destroyed the value of a residential property in the city of Diablo (near the Mount Diablo mercury mine). The law now requires that sellers and their agents disclose all known material facts and defects about the property which is for sale. Ten years prior at the time the Wessmans purchased the property, caveat emptor was the law of the land.

On May 10, 2005, the Wessmans transferred title for the property to the Wessman Family Trust.

North Parcel (078-070-033, 078-070-040)

On April 29, 1949, William Ryder Powell filed the first mercury mining claim on record with the County. It was a placer mining claim for Dunn Creek and included Township 1 North Range 1 East Section 29 northeast quarter.

The 160 acre parcel north of the Wessman property (Patent 5 and later 29926), as well as the 80-acre northwest quarter (also Patent 5), were patented by the General Land Office to the Western Pacific Railroad on May 21, 1870 under the Act of Congress that authorized construction of the first Transcontinental Railroad. However the Act prohibited patenting land to the railroad containing mineral resources. Therefore, on April 4, 1898, 160 acres of the railroad patent was revoked by the GLO and re-issued to William Rider Powell of Powell Cinnabar as mining patent 29926 for placer-mining cinnabar from Dunn Creek. Part of the land from that mineral patent is now part of the Wessman property, and part is land now belonging to Mount Diablo State Park, California Department of Parks and Recreation.

East Parcel (078-070-036 and eastern half of 078-060-034)

On May 15, 1869 the eastern portion of the present mine property was patented to Lyman Hastings as a land purchase. There is some evidence that the mining claim was filed with Contra Costa County years before this. The claim was probably originally a placer mining claim for Dunn Creek. According to Seth Adams (Adams, 2000), Lyman Hastings is credited with the first discovery of mercury on Mount Diablo at a mine prospect in Perkins Canyon one mile to the south now on land belonging to Mount Diablo State Park, although it seems that in actuality William Ryder Powell and Francis Such preceded him. This property is also bounded by the Sunshine Camp mercury prospect to the immediate east.

On June 17, 1874, Lyman Hastings died and sole title transferred to his widow, Frances C. Hastings. Sometime shortly thereafter she married a man named Hunsaker and they discovered a metacinnabar (polymorph of cinnabar) deposit on the property. There is some evidence that mining there may have begun around 1875 when the California State Mining Bureau first reported production. Mining apparently ceased due to litigation with the Welch or Bendixen claim around 1877. E.A. Howard of Howard Lumber Company bought the parcel on October 25, 1907. Howard Lumber Company were probably harvesting oak and maple trees from Mount Diablo and sold oak and maple hardwood lumber in San Francisco.

Mount Diablo Quicksilver Mining Company bought the property from E.A. Howard on February 11, 1934 and the property was unified with the purchase and consolidation of the western Welch (Ryne) and southern Bendixen mines on January 17, 1936.

West Parcel (APN 078-060-033)

This parcel contains an old manganese mine prospect and a rock quarry once operated by the Bradley Mining Company. The property now belongs to Mount Diablo State Park. It was originally part of the George Grutchfield GLO homestead claim and subsequent consolidated Mount Diablo Quicksilver Mine property. The property was sold by Robert E. and Dana Dunn on June 11, 1992 to Save Mount Diablo, who in turn sold the property on July 10, 1992 to the California Department of Parks and Recreation (Mount Diablo State Park).

South Parcel(s) (APN 078-060-032, 078-060-009, 078-070-034)

The parcel to the immediate south (078-060-032) was originally a non-patented mineral claim (Mineral Survey 3639) filed by Jacob Bendixen with Contra Costa County on April 28, 1878. It was part of the federal land patent sold by the GLO to George E. Grutchfield as Patent 404717 on May 11, 1914 that included the Welch mercury mine property. According to County records, Mary Ives Crocker (an heiress of the Crocker

banking fortune) and Kate Dillon Winship bought the land from Jacob Bendixen and Paul de Martini on December 23, 1908. The property is owned by Mount Diablo State Park today.

Parcel 078-060-009 was patented to Joseph Arraya (Patent 312143) on January 28, 1913 as a homestead claim and belongs to Mount Diablo State Park today.

Parcel 078-070-034 to the southeast was originally part of the Lyman Hastings cinnabar claim (patent 1494) and the consolidated Mount Diablo Quicksilver Mine. The Morgan Territory Investment Company subsequently acquired it and sold it to The California Department of Parks and Recreation on February 2, 1976. There is mine waste on the property. The Regional Water Quality Control Board cited the State Park for discharge of acid mine drainage from Horse Creek on State Park property to Dunn Creek beginning in March 1989 and as recently as August 18, 2000 (RWQCB, 2000). No enforcement action has been taken.

Northwest Parcels (APN 078-060-003, 078-060-036, 078-060-035)

These properties contain the original mine road built by Mr. Ogilby in the 1860s and are part of John H. Welch's original mining claim with Contra Costa County. 078-060-003 was part of a federal land patent to the Western Pacific Railroad on May 21, 1870. The others were part of the land patent to George E. Grutchfield, who bought the property on May 11, 1914. 078-060-36 belongs to Mount Diablo State Park today, 078-060-035 is private land.

3.2 Environmental hazards

Acid mine drainage and calcine mine waste create many environmental hazards, most of which have not been assessed. Presumably there are environmental hazards at some as yet un-quantified level of risk to human health and the environment due to windblown

dust, exposure to contaminated soil, impact to groundwater, and unauthorized discharge to Marsh Creek. Of these hazards, only the impact to Marsh Creek water quality has been assessed and is of interest to the Army Corps of Engineers under the Restoration of Abandoned Mines Program. At the time of this writing, the public file of the Regional Water Quality Control Board had not yet been obtained and the existing data had not yet been fully assessed, although the Contra Costa County files were made available.

Beginning as early as 1939, the California Department of Public Health has observed discharge of low pH water with sulfuric acid, flocculated iron, high total dissolved solids, chloride, sulfate, and hardness and began enforcement with the passage of US Public Health Service drinking water standards in 1946. Beginning in May 1952, the Regional Water Pollution Control Board issued discharge requirements under the California Dickey Water Pollution Control Act of 1949 for color, precipitate, settleable solids, pH, and undefined "toxic materials". The 1978 Order still in effect added copper, iron, manganese and zinc to the reporting list, but not mercury or nickel, the primary contaminants of concern. The drinking water standard for mercury was set in 1992 as a consequence of the Safe Drinking Water Act of 1974 and therefore post-dated the effective Order. No drinking water standard has been established for nickel but a Preliminary Remediation Goal has been established by EPA.

Aside from regulatory orders discussed in Section 2.9, the first study under modern environmental law and regulation was performed at Marsh Creek Dam in 1980 (CRWQCB, 1980). A fish study was conducted by California Department of Fish and Game and the California Department of Parks and Recreation as part of an environmental impact study for the creation of John Marsh House Park. Largemouth bass were found with 2.7 ppm mercury. Catfish and sunfish had up to 1.8 ppm mercury. The mercury limit in fish set by the Food and Drug Administration is 1 ppm. Fishing was banned in the lake.

In 1987, the Water Board sampled sediment and water in Marsh Creek Reservoir (CRWQCB, 1987). Nickel was in bottom sediment at 118 mg/Kg and mercury averaged 0.46 mg/Kg.

A study was done in nearby Brentwood, California along Marsh Creek for the Sweetwater Ranch development project (Wahler & Associates, 1990) to assess mercury contamination in Marsh Creek. A series of studies by the University of California at Davis were prompted by the recognition that abandoned mercury mines on Mount Diablo have a significant impact on the water quality of Marsh Creek (Slotton *et al.*, 1996, 1997 and 1998). Dr. Slotton concluded that Mount Diablo Mercury Mine discharges over 90% of the mercury in Marsh Creek. According to the production records of the US Bureau of Mines, the western and eastern mine works of Mount Diablo Mercury Mine account for most of the mercury production from the mining district. However, no mill works or calcines have been found at the location of other mining claims and prospects, leading to a suspicion that ore may have been transported from other smaller mining claims to the Mount Diablo Mercury Mine for ore processing. Further historical research would be required to determine where and how mercury was extracted from the other mercury mines in the mining district.

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Mount Diablo Quicksilver Mines - *Mining and Scientific Press*, Vol. 10, No. 21, p. 327 (May 27, 1865)

The Clayton Quicksilver Mine - **Mining Summary: California: Contra Costa, The Clayton Quicksilver Mine**, *Mining and Scientific Press*, Vol. 32, No. 24, p. 373 (June 10, 1876)

**TABLE 1
TRACING CURRENT ASSESSOR PARCELS TO ORIGINAL MINING CLAIMS**

<i>PLSS SECTION</i>	<i>ORIGINAL CLAIM</i>	<i>SUBSECTION</i>	<i>APN</i>	<i>Owner</i>	<i>Mine or Millworks?</i>	
MDBM T1N R1E S29	William R. Powell	NE ¼	078-070-033	Mt Diablo State Park		
			078-070-040			
	John Welch	SE ¼ NW ¼	078-060-034 (part)	Wessman		Y
			078-060-034 (part)	Wessman		Y
			078-060-033(part)	Mt Diablo State Park		
			078-060-003	Mt Diablo State Park		
			078-060-035			
			078-060-015			
			078-060-021			
			078-060-036	Mt Diablo State Park		
MDBM T1N R1E S28	Lyman Hastings	NW ¼ NE ¼	078-060-033	Mt Diablo State Park		
			078-060-034 (part)	Wessman	Y	
			078-070-036	Mt. Diablo Springs Improvement Society	Y	
			078-070-035			
			078-070-034	Mt Diablo State Park		
			078-070-024			
MDBM T1N R1E S28		SW ¼ W 1/2	078-070-021			
			078-070-042			
			078-070-043			

Mount Diablo Quicksilver Mine Production History

	Owner	Operator	Ryne Mine (flasks)	Ryne Mine (lbs)	Mount Diablo Mine (flasks)	Mount Diablo Mine (lbs)	Ore (tons)	Ore (%)	Calclines \$
1863-1875	General Land Office	Pioneer Copper Mining Co.	?	?			?	?	
1875-1877	Welch	Welch Quicksilver							
1877-1912	Welch	Ryne Mining Co?	1,000	76,000			?	?	
1912-1913	General Land Office				?				
1914-1929	George E. Grutchfield	E.A. Howard Lumber?							
1929									
1930			58	4,408	9	684	?	?	
1931									
1932									
1933					730	55,480	?	?	
1934									
1935									
1936									
1937					314	23,864	2,911	3%	\$40
1938					1,361	103,436	8,850	9%	\$6
1939					1,462	111,112	12,000	13%	\$42
1940					1,084	82,384	14,400	15%	\$263
1941					1,622	123,272	14,400	15%	\$827
1942					1,366	103,816	12,000	13%	\$375
1943					1,127	85,652	11,000	12%	\$2,562
1944					698	53,048	5,500	6%	\$1,886
1945					434	32,984	4,500	5%	\$3,880
1946					861	65,436	6,000	6%	\$11,253
1947					126	9,576	1,000	1%	\$32,899
1948					0	0	0	0	\$25,739
1949					0	0	0	0	\$8,640
1950					0	0	0	0	\$9,356
1951-1952		Ronnie B. Smith			102	7,752	1,369	1%	
1953-1954		Jonas & Johnson			21	1,596	309	0%	
1955		Cordero Mining/Sunoco			?	?	?		
1956		Nevada Scheelite/Kennametal			?	?	?		
1958		J.E. Johnson			0	0	0		
1960	Victoria Resources	Weity & Randall			?	?	?		
1970	Guadalupe Mining Co.				?	?	?		
1974	Jack Wessman				?	?	?		
		TOTAL	1,058	80,408	11,317	860,092	94,239		\$97,768